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No. 132

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WIDE





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CONTENTS PAGE

EASTERN EUROPE

BULGARIA

Major Popular Protest Opposes Dam Construction
(OTECHESTVEN FRONT, 25 Jan 77)..... 1

Concern Over Parangalitsa
Let Us Protect This Unique Corner
Do Not Encroach on Beauty!
Dictated by Common Sense
On Behalf of the Whole Population, We Insist
To the Readers

EAST GERMANY

Water Purification Procedures Discussed
(Thomas Bencard; TECHNISCHE GEMEINSCHAFT, Dec 76)..... 9

Felt Used in Air Filters Improves Performance
(B. Dietzsch; CHEMISCHE TECHNIK, Dec 76)..... 12

Briefs
Antitraffic Noise Measure 14

SUB-SAHARAN AFRICA

RHODESIA

Bill Raises Penalties for Atmospheric Pollution
(THE RHODESIA HERALD, 18 Feb 77)..... 15

CONTENTS (Continued) Page

USSR

Moscow Adopts Antipollution Measures
(MOSKOVSKAYA PRAVDA, 12 Jan 77)..... 16

Protecting Caspian Sea From Pollution
(M. Dobrorodnykh; TURKMENSKAYA ISKRA, 9 Jan 77)..... 18

Soviet-Iranian Pollution Control Measures in Caspian Sea
(A. Khachikyan; ZARYA VOSTOKA, 11 Jan 77)..... 20

Azerbaydzhan Strengthens Anti-Pollution Controls
(VYSHKA, 4 Feb 77)..... 22

Obstacles in the Path of the Electric Car
(L. Shugurov; VYSHKA, 27 Jan 77)..... 24

Man, the Automobile, the Environment
(A. Mutalibov; PRAVDA VOSTOKA, 13 Jan 77)..... 26

Briefs
Caspian Antipollution Facility 31
Bacterial Water Purification 31
Niyazbekov Discusses Conservation 31
Ukrainian Anti-Pollution Innovations 32

WESTERN EUROPE

FRANCE

Waterless Cooling Proposed for Nuclear Power Plants
(Xavier Weeger; LE MONDE, 29 Jan 77)..... 33

SWEDEN

Industrial Projects Threaten Environment in Scania
(Claes Sturm; DAGENS NYHETER, 12 Jan 77)..... 36

TURKEY

Ankara Anti-Air-Pollution Measures Insufficient
(Engin Karadeniz; CUMHURIYET, 4 Jan 77)..... 39

Municipalities' Clean-Up Efforts Yield Results
(AKSAM, 28 Jan 77)..... 41

# MAJOR POPULAR PROTEST OPPOSES DAM CONSTRUCTION

## Concern Over Parangalitsa

Sofia OTECHESTVEN FRONT in Bulgarian 25 Jan 77 p 1

[Text] Nikolay Georgiev, chairman, National Committee for the Defense of Nature:

Natural resources and beauty, combined with the people's concern for their protection and reproduction, are the most valuable thing giving meaning to the life of our society and enhancing the appearance of our homeland in the process of its historical development. What kind of future Bulgaria would we have if we allow the great and beautiful panorama of nature to be disfigured, in the course of such development, its valuable components to be destroyed or eliminated, or for nature to change, to the detriment of the wonderful balance it has developed over thousands of years?

A Bulgaria with a degraded natural environment, impoverished water sources and polluted waters, a climate worsened from the health point of view, with specimens of its flora and fauna threatened with extinction, would affect the future creative potential of our people, a potential developed over the course of centuries. This is why, at the present stage in our historical development, when a variety of factors operating in different sectors are deteriorating the condition of our Bulgarian natural environment, the conscious Bulgarian mentality is restless, reacting promptly to anything which disturbs its balance. It also reacted, with full justification, to some plans and actions which would change the ecological system in the area of the western Rila Mountains, in the midst of which are the Parangalitsa and Rila Monastery Reservations. The views expressed on this subject, in particular through the mass communications media such as OTECHESTVEN FRONT and Radio Sofia broadcasts, are quite pertinent. They prove that there are indeed actions which threaten not only Parangalitsa, an exceptionally important natural site, but the ecology of the entire area as well. Justifiably, Archimandrite Metodi, Rila Monastry abbot, asked: "What will become of the Monastery, which has no equal anywhere in the world?" The Rila Monastery attracts visitors not only as a unique architectural complex, with its own history, but also because of all that nature has developed in this part of

the Rila Mountains, which is something truly unique. At present, this area echoes the sounds of the Manastirska River, which gives life to the vegetable and animal world in this captivating mountain area.

The questions raised about Parangalitsa, the Manastirska River, and other sites in this part of the western Rila Mountains should be discussed extensively at a responsible state and public forum, in order to bring about their most successful solution, going beyond the framework of any narrow departmental or financial considerations. Initially, there was a plan to divert the waters of some of these rivers to other channels. The practical result of this would be the destruction of the Parangalitsa Reservation. In 1972, on the recommendation of the National Committee for the Defense of Nature, the matter was discussed by representatives of competent and interested circles. A suggestion was made that the project should be abandoned. It was adopted by the Council of Ministers. It is true that in the course of this discussion we encountered opposition from some departments. Unfortunately, they are still unable to see beyond the boundaries of their departmental interests and technocratic concepts, which clearly continue to dominate them to this day. One of the concerns motivating their opposition to any changes in their initial plan was that the changes would be more costly. But are the values created by nature without worth? Generally speaking, they are invaluable from the viewpoint of their aesthetic significance alone. A work of art created by the human hand is sometimes priced at fabulous sums. But what can we say about the value of riches created by nature in the course of millenia, over a period of millions of years, revered by man, who is unable to duplicate them? Naturally, the resolution of problems related to the utilization of natural resources such as the waters of the Manastirska and Blagoevgradska Bistritsa Rivers, and the changes to be made in the natural environment, should work toward its protection and enrichment. In no case should they be to its detriment. This is sensible. It is dictated by our highest national interests. The true Bulgarian patriot, the patriot of our socialist cause, should aspire to this.

I take this occasion to raise the specific question of the interest shown by our public in the Parangalitsa Reservation, about which a great deal has been said. I believe that monographs have been written about it, as well. However, it is still unfamiliar to a wide range of our nature lovers. Following the example of many similar natural sites, a museum should be built to display items representing the whole animal and vegetable world on reservation territory, here again, immediately adjacent to the reservation, where the Blagoevgradska Bistritsa originates. Diagrams and notes should describe its full contents and development. Such a museum could also serve as a base for the further study of the components of the reservation, for many of its floral species have not as yet been classified, and their characteristics are far from known. This will enhance the interest of nature lovers in this unique Bulgarian natural site, and will contribute to the patriotic education of all generations.

## Let Us Protect This Unique Corner

Sofia OTECHESTVEN FRONT in Bulgarian 25 Jan 77, p 2

[Text] Kiril Nikolov, chairman, Kyustendil Okrug Fatherland Front Committee:

The Kyustendil Okrug Fatherland Front Committee held a special session in connection with the publications dealing with the protection of the Parangalitsa Reservation and the environs of the Rila Monastery. Let me add to this that the development of this very important matter is being followed very closely by all Fatherland Front members and the public at large in our okrug.

Parangalitsa belongs to Bulgaria. The explanation provided by Energoproekt to the effect that in any possible future construction, its integrity would not be disturbed, does not sound convincing.

Danger also threatens the environs of the Rila Monastery. Not even a year has elapsed since it was proclaimed by Council of Ministers decree an historical and architectural monument, and geologists are engaged in surveys. Plans are being drafted, and the building of a dam may be started soon in the area of Zhabokrek or Pastra, to retain over 30 million cubic meters of water. The people in the area of Stanke Dimitrov and the whole of Kyustendil Okrug categorically oppose the retention of the waters of the Rilska, Bistritsa, Otovitsa, and Dzherman Rivers.

At accountability meetings of Fatherland Front organizations and obshtina people's council sessions in the Stanke Dimitrov area, as well as in the mining city of Bobov Dol, and in Rila, Golemo Selo, Pacharevo, and other settlements, the people have seriously raised the question of drinking water and water for household use. The entire area relies on these rivers for its water supply. Should they be tapped for use by other settlements by diversion, it would be unfairly deprived of its water. The result would be, as the folk saying goes: "Water, water, everywhere, and not a drop to drink," even though we are in the foothills of the Rila, or as we call them, the "water" Mountains. Promises that the water supply for this area would come from the Pastra Dam are groundless. The case of the Dyakovo Dam is still fresh in our memories. According to the plan, the waters of the Otovitsa and Dzherman Rivers were to be channeled to the dam along a gravitation canal, thus also making possible the irrigation of some 30,000 decares of fields and meadows. The plan was not implemented. A "rationalizer" was found who proved that it would be economically more advisable to build a pressure canal. Unfortunately, this "rationalization" was put into effect and the plain was left without water! Narrow departmental interests and the underestimation of needs did great harm to the people and the national economy.

The Rila Monastery is not only a reservation, but our national museum as well, a storehouse of the Bulgarian heritage, and our national pride. Who among us has not revered its thousand year old history! Is it proper to deprive this charming area of its rivers? Yet this precisely is the purpose of the plans drafted by the Energoproekt IPP [Study and Design Institute].

The capitalist Balabanov encroached on the forest of the monastery. He was the first to violate this unity of greatness, mystery, and beauty. Now, however, under the people's regime, we have a Law for the Protection of Nature. Would we allow the building of hundreds of kilometers of tunnels and canals destroying thousands of decares of timberland? Why destroy that which nature has given us? We dig in the earth to find and show to the world specimens of Thracian art and culture, yet that which has been preserved thus far we doom to destruction by our actions! In our view, the time has come to block the narrow departmental approach and to take a statesmanlike attitude in the interests of the people as a whole and future generations. This is why public opinion in Kyustendil Okrug opposes the plan proposed by Energoproekt.

Do Not Encroach on Beauty!

Sofia OTECHESTVEN FRONT in Bulgarian 25 Jan 77 p 2

[Text] Professor Georgi K. Georgiev, corresponding member, International Committee on the History of Geological Sciences:

Some years before World War II, I recall the enthusiasm with which Academician Professor Nikolay Stoyanov described the Parangalitsa Forest and the vast Khambara Valley in the northern slopes of the Slavyanka-Ali Botush, above the village of Paril. He was proud of the fact that Bulgaria's territory included such natural sites of worldwide significance.

In 1963, the nature lovers in our country were alarmed by the news that the ecological complex of the Parangalitsa Reservation was drying out. Later on, learning that the danger was past, they gave a sigh of relief.

Today, however, they are once again justifiably concerned about the reports of hydroengineering and water supply measures which the Energoproekt IPP intends to implement in this area.

As a geologist, I have had the opportunity to visit the forests of Czechoslovakia, the GDR, the FRG, Norway, France, and Switzerland, in addition to geological and ore-mining sites. I was enraptured by and intoxicated with the romanticism and mysticism of these forests. What about Parangalitsa? This is no conventional reservation. It is a unique biocenosis entered, as our national pride, in the Gold Book of Reservations throughout the world maintained by the United Nations. The Rila Monastery and its environs constitute one of the most beautiful areas in Bulgaria. It is a wonderful, fabulous sector!

We are aware of the extreme need for energy and water supplies. We do not oppose measures to obtain them. However, why should one-of-a-kind reservations be destroyed?

We spoiled Pobitite Kamuni; we wrecked the little Varna Desert by gathering up the mineral formations in trucks in order to organize an alpine exhibit at Varna's Maritime Garden! We destroyed Bulgaria's longest dune by building a modern highway on it! We destroyed the primitive charm of Arkutino in order to build a few camping sites! We almost destroyed the beauty of the Batova River for the sake of "Albena!" We "razed" the fabulous, mysterious-mystical white pine forest between the Demyanitsa tourist shelter and the Vasilashki Lakes, the virgin pine forest near Popovi Livadi, in the southern Pirin Mountains, and the Hayduk beech woods near Ambaritsa. Let us not even mention river pollution. Yet even now there are those who would like to destroy the Parangalitsa and Rila Monastery Reservations as well!?!

Dictated by Common Sense

Sofia OTECHESTVEN FRONT in Bulgarian 25 Jan 77, p 2

[Text] Professor Simeon Nedyalkov, Bulgarian Academy of Sciences Forest Institute:

The Parangalitsa Reservation is an exceptional forest-biological phenomenon unique in Europe. Formulating the latest forest organizational plan, under our methodical guidance, it was established that its territory includes more than 20 different types of trees and shrubs, and 93 different types of semi-shrubs and grasses. It is inhabited by nine species of large game, eight types of rodents, 27 bird species, 13 types of reptiles, and 61 different types of insects. All of these plants and animals are cohabiting thanks to the optimal conditions developed for the maintenance of their biological balance. Also found here is saprophyte vegetation of the orchid type, quite rare in Bulgaria. Parangalitsa also has the most highly productive spruce stands in Europe, with a stock of 1,435 cubic meters per hectare at the age of 90 years.

We learn from the newspapers that the building of a diversion canal for a water-collection complex, projected by Energoproekt, is planned for the lower part of the reservation. This canal would affect the forest vegetation which is scientifically most interesting. As a result of the blasting in the process of construction, the ecological balance of the reservation will be seriously disturbed. Especially great changes will occur in the water balance and hydrological conditions, and therefore, in the biological balance of the vegetable and animal worlds. This will trigger the deterioration of forest ecological systems. There are no measures which could restore the existing forest ecological systems, because of disturbed ecological conditions. In other words, something "irreparable" will occur: the Parangalitsa Reservation will cease to exist.

There was a time when the irreparable deterioration of nature occurred very slowly. Today, it is happening very rapidly. When building plants 25 years ago, we could not even imagine that air and water pollution would come about so rapidly. But it did. At that time, we were unaware of a number of things. Today, however, problems require a comprehensive solution.

The mention of Parangalitsa and the Rila Monastery Reservation is not a question of some sort of sentimentality toward nature, but of an imperative dictated by common sense and our duty to present and future generations.

## On Behalf of the Whole Population, We Insist

Sofia OTECHESTVEN FRONT in Bulgarian 25 Jan 77 p 2

[Text] Rayna Ganeva, chairman, Rila City Fatherland Front Committee:

The members of the Fatherland Front and the people of Rila are following the debate on the preservation of the unique Parangalitsa and Rila Monastery Reservations, as well as nature in the southwestern part of the Rila Mountains, with great excitement. With the exception of the Energoproekt IPP viewpoint, which is baseless, the views published to date--those of the management of the Ministry of Forest and Forest Industry, the Cultural Monuments Institute, and others--are imbued with concern and alarm about the preservation of nature and its resources.

It seems to us, however, that the Ministry of Forests and Forest Industry should feel some guilt about the destruction of forest areas in our country. Why does it readily agree to water tapping and the building of tunnels and canals at lower elevations!?! Why? Is it not the authority, the responsible authority in our country to which the legislators have assigned the duty and obligation to take care of and watch over the safeguarding of forests and the natural environment? The Ministry is thoroughly familiar with the vast damage done to nature by the construction project carried out at elevation 2000 to channel water to the Belmeken-Sestrimo Hydraulic Power System. The pledges made by the construction workers with regard to reafforestation went unfulfilled.

Architect Ivan Nikolov, Cultural Monuments Institute director, and Archimandrite Metodiy, Rila Monastery abbot, categorically oppose the building of a dam within the Rila Monastery area. We, in turn, oppose such a project in the immediate vicinity of the town of Rila or at the Zhabokrek Historical Site. These 30 million cubic meters of water will become a mortal danger not only to the people of our city, but also to the other settlements along the valley of the Rilska River! The planners assure us that the huge dam will be built by means of modern technical facilities and with high-quality materials and installations. Several years ago, the obshtina management built a small dam in order to increase the volume of some Rila lakes. Subsequently, the dam cracked, because, to begin with, the ground is unstable,

and the water element did a great deal of damage to Rila and caused panic and fear among the people. At all Fatherland Front meetings, the people urge us to prevent the building of a dam in the Rilska River bed.

We oppose the building of a dam in Zhabokrek and Pastra area for other reasons as well.

First, the cost to the state of resettling the population of the village of Pastra would exceed 2.5 million leva, and the land in the area would have to be abandoned.

Second, the new dam would eliminate both the Pastra and Rila Hydroelectric Power Plants, which produce more than 100 million kilowatt hours of electric power per year. This too would represent a great loss to the state.

Third, the dam planned, in the Zhabokrek or Rila area, would destroy two exceptionally valuable historical and architectural monuments--Metokha and Orlitsa--which represent an intrinsic part of the overall complex of the national architectural and historical Rila Monastery monument.

Fourth, if the dam is built in the Zhabokrek area, this historical site of one of the major partisan battles waged in 1944 would be flooded and destroyed.

Bearing all this in mind, the Fatherland Front members and the entire population of Rila insist that the plan for the building of a dam in the Rilska River valley be rejected.

## To the Readers

Sofia OTECHESTVEN FRONT in Bulgarian 25 Jan 77 p 2

[Text] The discussion in the pages of our newspaper, PIRINSKO DELO and Radio Sofia broadcasts on the fate of the Parangalitsa Reservation and the Rila Monastery environment have triggered great social response. Every day we receive letters from specialists, public figures, and citizens. Their appeal can be summarized in a few words: "Let us safeguard the beauties of nature for ourselves and future generations."

The alarm is justified. The real danger that irreparable harm will be done exists.

Our readers are reacting sharply to the designer's plans. They have often admired the achievements of Energoproekt specialists, who are participating actively in the solution of the country's major energy problems.

Now, however, it is obvious that no one will tolerate the neglect of major national interests if the opinion of our population is ignored. Some errors may be reparable. An error involving Parangalitsa and the landscape surrounding the Rila Monastery would irreparable.

We conclude the discussion with the items published in this issue. We thank the newspaper readers and the radio listeners who took part. We are confident that the state authorities responsible will assess all viewpoints and make a clear, well-substantiated decision such as to preserve the integrity of Parangalitsa and the Rila Monastery environment.

5003
CSO: 5000

WATER PURIFICATION PROCEDURES DISCUSSED

East Berlin TECHNISCHE GEMEINSCHAFT in German Dec 76 pp 37-38

[Article by Thomas Bencard: "Purity From the Depths. New Methods for Keeping Waters Clean"]

> [Text] Today water is surely one of our most valuable resources. But it is also just as certain that this valuable liquid requires more careful treatment if it is not to become scarce sooner or later. For just as demand keeps rising, so is the pollution of most waters constantly increasing. A whole range of preventive measures is required to stop this process. A large number of practical and scientific findings in this regard are already at hand, others are being developed and tested. The present state and outlook were discussed by researchers and experts from all over the world at the end of September in Karl-Marx-Stadt at Eutrosym 76, an international symposium on eutrophication.

Experts use the concept of eutrophication for the greatest danger now threatening most waters. As a result of steadily growing industrial and agricultural production and with it growing demands for water, lakes, seas, rivers and barrages and even sometimes ground water threaten to get dirty to an increasing degree, becoming a better and better culture medium for microscopic plant and animal organisms. Connected with that is a genuine explosion of costs for purification of water which has to be made available to meet the demands of industry, agriculture and above all of the population. There is the additional difficulty that the demand for water increases substantially year after year, in our capital alone by 4.5 percent per year according to calculations by experts. A glance at the probable development up to 1990 makes all the implications of the problem clear: the requirements of the people will rise to 165 percent, not the least with the implementation of the extensive housing construction program. The requirements of industry with further intensification will rise to 135 percent and of agriculture, particularly with the establishment of sprinkler irrigation, will rise

to no less than 335 percent vis-a-vis the 1975 level. Thus, all in all, truly gigantic increases.

Nonetheless, there is no reason for pessimism. Water is one of the natural resources which constantly renews itself in a natural cycle. The level of water use in the GDR is extremely high today. It will have to rise further because, for example, the introduction of warmer water from power plants, the increasing use of mineral fertilizers for agricultural areas and the use of waters for relaxation purposes will push eutrophication further. Yet experts, after thorough studies, are of the opinion that waste quantities can be used even six to eight times.

Careful Use of Costly Liquid

Yet the prerequisites for that must be created by circumspect work and cautious use of costly water in every enterprise. A task that also appeals to our enterprise sections for action. Reckless behavior in this area has for a long time no longer been a peccadillo which might be dropped in the face of plan tasks that were otherwise fulfilled.

Whoever fouls water today in an unnecessary way or does not purify it sufficiently violates the principles of the unity of economic and social policy which were formulated in the primary task, all of which was emphatically confirmed at the Ninth SED Congress. For not just the higher costs, which must be met by the economy for the purification of water, are of consequence, but also the fact that our waters are among the centers of popular recreation areas which must be preserved from further pollution, even by the work of every single enterprise!

Deputy Minister for Environmental Protection and Water Management Guido Thoms, senior engineer and graduate economist, recently provided information about the question of to what extent individual branches of industry in our republic are involved in eutrophication: "Measured by the quantity of components in the waste waters, the chemical industry, light industry and the food industry, the agriculture and foodstuffs industry and the population are the primary pollutors of the waters.

What is the way out of this situation? In response to this, Minister Thoms said: "Orderly purification of waste water right at the point of origin is thus of priority economic significance. Calculations have shown that purifying polluted water costs six to ten times as much as it does to purify the same volume of waste water at the point of origin. It will be possible to solve the problem of water protection more and more effectively to the extent that there is success in shaping the technological processes in such a way that intermediate and waste products of industry which result in a concentration of components in the waste water are held back and used as secondary raw materials. Even passive waste water purification which has as its goal only harmless removal of the components and as a rule drains mineralized nutrients into the waters, must, in the interest of high economic

effectiveness, yield to such procedures which make minimal use of the components in the waste water, for example, growing and extracting fodder protein from production waste waters in cellulose production or the foodstuffs industry." These are the words of the minister, who is thus appealing to every enterprise section to make its contribution in order to accomplish environmental protection in this area and material economy in the best sense of the word.

Technical Developments Against Eutrophication

This is not the place to describe the various jobs by means of which the effort is being made in many countries, as also by means of research cooperation among the CEMA countries, to find out about the complicated mechanism of eutrophication. Of course, it is known with certainty that especially compounds with nitrogen and phosphorus promote eutrophication, but which factor accelerates it in particular and how these work together is still largely unknown.

A remarkable tendency consists in the fact that even the control of waters is automated to a much greater extent. Programed test probes working independently record the most varied data, which are then transmitted to central laboratories via long-range transmission systems. There they are recorded with modern computer technology and automated scientific devices, stored and evaluated so that at any time we have precise information about the current level. This system, as was installed most extensively, for example, for drinking water barrages, is presently being further expanded and completed within the framework of the entire GDR.

Two solutions which are interesting from an engineering point of view and which were developed and tested in our republic to counter eutrophication are these: deep water aeration, which means that water particularly rich in nutrients and poor in oxygen is pumped to the surface from a depth of 20-30 m in barrages and lakes using installations of glass fiber reinforced polyester resin and then enriched with air. Depending on the size of the units which exist in two variations 1,800-7,000 cubic meters of water can be circulated per hour. The second method being tested on the Arendsee in Magdeburg Bezirk is the deep water drain. In this, plastic pipes are laid to a depth of almost 50 meters. The upper opening which opens into a steel pipe and then into a ditch is located 0.5 m below the level of the water surface. In this way natural water pressure is enough to force the nutrient-rich ground water up through the pipes where it can be sprayed on productive agricultural areas.

12124
CSO: 5000

FELT USED IN AIR FILTERS IMPROVES PERFORMANCE

Leipzig CHEMISCHE TECHNIK in German Dec 76 p 748

[Article by B. Dietzsch, Merseburg]

[Text] In addition to the traditional materials, felt has recently been used in dust separators. With felt materials good separation results with low filter resistance and high filter area capacity are possible. These felts are treated almost exclusively at the surface of the side facing the current in order to influence in the best possible way the caking process in dust separation and thereby avoid clogging and the resulting increases in loss of irreplaceable pressure. Surface treatment also has a great influence on the filtering performance of felt.

It is difficult to describe the pore system of these kinds of felts because they have two different kinds of pores, one in the inside of the filter and the other at the side facing the current. Through sufface treatment the maximum of the pores at the side facing the current is changed to smaller diameters. The felt is about 1.5 to 2 mm thick and often, to increase durability, felts are strengthened with inlaid textile fabrics.

In the ecological department of the Advanced Technical School "Carl Schorlemmer," Leuna-Merseburg, Methods Technology Section, experiments are being made on the dust separation performance of different felt materials under laboratory conditions, given variable concentrations of dust in the raw gas and variable filter exposure to quartz dust. Tests show that the initial degree of separation (after 1 minute) is higher for felts than other fabrics, and that the degree of separation rises considerably with additional exposure to dust so that end results are reached in a relatively short time. At a filter surface exposure of 2.3 $m^3/m^2$ min and with a raw gas concentration of quartz dust ($d_{50}$ = 10 mu m) to the extent of 2 to 10 $g/m^3$, degrees of separation of over 99 percent, at times 99.9 percent, were achieved. At higher concentrations of raw gas a loss of pressure of about 1.500 $N/m^2$ ($\approx$ 150 mm WS) was noticed within a time span of 10 to 12 minutes. From test results it was possible to conclude that surface treatment of the side facing the current plays an important role. An increase in filter surface exposure to 3.8 $m^3/m^2$ min, resulted in degrees of

separation of about 98 percent. The even-surfaced felt samples exposed to dust showed good, clean performance. Cleaning was accomplished through steady air rinsing. The minimal amount of dust remaining in the felt material did not result in a noticeable rise in the loss of pressure after several cleanings.

It can be surmised that through the use of appropriate felt material as filter medium the effectiveness of dust-collecting equipment can be increased.

8889
CSO: 5000

## BRIEFS

ANTITRAFFIC NOISE MEASURE--The Bezirk Health Inspectorate Berlin undertook to measure noise levels in all districts of the capital, for example, at the corner of Bersarinstrasse and Leninallee for the purpose of systematic and gradual reduction of the noise level. These measurements serve both to ascertain the present level of noise and estimate noise development, as well as to introduce measures for municipal building and traffic technology. In this the Bezirk Health Inspectorate, in accordance with the directive of the ninth party congress, is pursuing the goal of gradually lowering the noise levels in residential areas. [Text] [East Berlin KRAFTFAHRZEUGTECHNIK in German Jan 77 p 4] 12124

CSO: 5000

BILL RAISES PENALTIES FOR ATMOSPHERIC POLLUTION

Salisbury THE RHODESIA HERALD in English 18 Feb 77 p 5

/Text/ A bill to increase the penalties for contravening the Atmospheric Pollution Prevention Act passed its second reading.

The bill raises the penalty for breaking laws on pollution by specified industrial processes from a fine of $400 or 6 months' imprisonment to a fine of $5,000 and 12 months' imprisonment. For subsequent offences the fine is up from $2,000 to $10,000 and imprisonment from 1 year to 2 years.

The minister of health, Mr Rowan Cronje, said the Air Pollution Advisory Board had recommended the increases because it considered that the high cost of air pollution control measures, particularly for "certain large-scale and highly profitable industrial processes" might make it financially advantageous for the industries concerned to pay the smaller fines and continue to commit offences.

He said a court would only impose maximum penalties in very serious cases.

Committee stage was set down for Tuesday.

CSO: 5000

MOSCOW ADOPTS ANTIPOLLUTION MEASURES

Moscow MOSKOVSKAYA PRAVDA in Russian 12 Jan 77 p 4

[Article: "For a Clean Environment"]

[Text] The bureaus of the Moscow City Committee and the Moscow Committee of the CPSU and the ispolkoms of the Moscow Soviet and the Moscow Oblast Soviet have adopted a joint decree on planned environmental protection measures in Moscow and Moscow Oblast during 1976-1980.

The decree mentions the fact that the party raykoms and gorkoms, the ispolkoms of rayon and city soviets, ministries and departments have done a certain amount of work to fulfill the decree of the CPSU Central Committee and the USSR Council of Ministers of 29 December 1972 "On the Greater Protection of Nature and the Better Use of Natural Resources." Industrial and transportation enterprises and city and oblast economic units have constructed and started-up installations to purify industrial sewage and surface water and have built and remodeled gas and dust traps. Improved technological processes have been introduced at many enterprises. Work has been done to beautify, landscape and clean out the channels of the Moscow River, the Yauza and other bodies of water. The sanitary condition of the territory has improved.

But there are still considerable shortcomings in environmental protection work. The construction and remodeling of water-conservation and air-protection installations is being conducted too slowly in some places. Allocated capital investments are not used in their entirety each year. The rates of the construction of purification installations frequently lag behind the rates of industrial, housing and public utilities construction. The main administrations and administrations of the Moscow city and oblast ispolkoms are not taking the necessary measures to accelerate the construction and remodeling of conservation facilities or to reduce the toxicity of vehicle exhaust.

The city and oblast are still organizing the utilization and processing of industrial by-products and sludge unsatisfactorily. Ministries and departments are too slow in closing down industrial enterprises and organizations with harmful sanitary conditions.

These shortcomings, the decree states, attest to the fact that the party raykoms and gorkoms, rayispolkoms, gorispolkoms and party organizations are not making enough demands on the administrators of enterprises and organizations to effect the rapid start-up of water purification installations and dust and gas collectors and to reduce the amount of unpurified or insufficiently purified industrial and household sewage disposed of in bodies of water.

The decree states that party raykoms and gorkoms, the ispolkoms of rayon and city soviets, party organizations and the administrators of the main administrations of the Moscow city and oblast ispolkoms and enterprises and organizations of ministries and departments must take more effective measures to ensure the fulfillment of the decree of the CPSU Central Committee and the USSR Council of Ministers of 29 December 1972 "On the Greater Protection of Nature and the Better Use of Natural Resources" and the environmental protection measures set for the current 5-year period.

The decree ratifies a specific plan of measures to protect the environment in Moscow and Moscow Oblast during 1976-1980; the plan has the approval of ministries and departments.

These measures include the development of scientifically substantiated programs directed toward the protection of nature and the intelligent use of natural resources for the period up to 1990 in accordance with the plans for the socioeconomic development of the city of Moscow.

The plan also calls for the equipping of industrial enterprises and production units with highly efficient dust collectors and gas purifiers, expansion of the landscaped and forested zone and prevention of the pollution of the atmosphere, rivers and reservoirs.

The city and oblast people's control committees, the main administrations of internal affairs of the Moscow city and oblast ispolkoms, sanitary and epidemiological stations, inspectors of the operations of gas purifiers and dust collectors and the Moscow-Okskiy (territorial) Water Conservation Administration are to organize regular supervision over the fulfillment of the planned measures on natural and environmental protection by enterprises and other organizations.

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CSO: 5000

PROTECTING CASPIAN SEA FROM POLLUTION

Ashkhabad TURKMENSKAYA ISKRA in Russian 9 Jan 77 p 3

[Article by M. Dobrorodnykh, head of the Cis-Caspian Basin Inspectorate: "The Caspian Sea Must Be Clean!"]

[Text] The fight against the pollution of the Caspian Sea has become an integral part of the everyday concerns of many enterprises in Krasnovodskaya Oblast. Stations for the intake and purification of ballast water are operating on the piers of the Krasnovodsk storage and piping terminal and the ports of Aladzha and Okarem. The use of this equipment has aided in reducing the disposal of water polluted by oil by 3 million tons this year and in collecting around 27,000 tons of petroleum products suitable for use. Purification installations are operating at the oil refinery, the Krasnovodsk Maritime Trade Port, the flushing and steaming station of the Krasnovodsk-2 Train Depot and the meat combine. A great deal is being done to prevent the pollution of the sea on ships of the Caspian shipping lines and other lines of the Vostochnyy Rayon Oil Fleet Administration. More intensive work is being done to collect and utilize petroleum waste products and to keep the water in ports clean.

But we still cannot be content with our accomplishments.

The rates of housing and industrial construction are still far out of line with the rates of the construction of purification facilities. This lack of correspondence exists in Cheleken, Krasnovodsk and Bekdash. Schedules for the construction of purification installations and sewerage systems are not being met. For example, the construction of a reservoir in Krasnovodsk for pumping industrial sewage from the heat and power station to the oil refinery purification installations is being carried out too slowly, although the estimated cost of this work is relatively low--145,000 rubles, and the collector was to have begun operating in 1975. The date for the completion of the neutralization station and the reservoir for pumping waste and neutralized sewage to the desert zones of the peninsula at the Cheleken Chemical Plant was planned for 1972.

This last project deserves special discussion. The design for the Cheleken sewage installations, which was worked out by the Turkmenkommunproyekt

Institute, was full of errors and omissions requiring correction. But the client--the Turkmenneft' Association--displayed such inefficiency in making all of the decisions connected with the correction of the design that it has still not given designers many of the necessary initial data or signed a contract for the performance of this work with the Turkmenkommunproyekt Institute. Most of the funds allocated for this project in 1976 were used by the association to finance other projects.

The Cheleken Maritime Administration for Exploratory Drilling has the dubious honor of being an energetic violator of the Law on Environmental Protection. It is not carrying out water conservation measures in their entirety. Many of the steel "islets" from which offshore drilling is being conducted lack the necessary safeguarding devices and canvas shields for preserving chemical reagents, and the exhaust pipes of diesel engines are not equipped with oil traps. As early as 1974, plans were made to equip offshore drilling structures, ships and piers controlling the localization of run-off with floating barriers and petroleum waste traps, but few of the ships in the fleet are equipped with these means as yet. Stations for the intake and purification of waste water from ships belonging to the Cheleken Maritime Administration for Exploratory Drilling are still not being built.

This is far from a complete list of the errors and omissions in the fight against the pollution of the sea. Unfortunately, enterprise administrators are not only unconcerned about the fulfillment of these plans, but have even made a practice of beginning to drill wells without the participation of representatives from agencies for the regulation of the use and protection of the sea.

There are many other ways of protecting the sea against pollution that are not based on the purification of sewage. The Krasnovodsk Oil Refinery is using 67 air-cooling systems. These systems reduce the consumption of drinking water and water for technical use by 66-80 percent and considerably reduce the losses of valuable substances flushed away with sewage.

But the construction of a recyclable water supply system is being delayed and the date of its completion is postponed each year.

The protection of the sea against pollution by sewage requires great expenditures of funds and materials. This provides an enormous field for the suggestions of enterprise efficiency experts. After all, the pollution of water in industrial production occurs during certain definite stages in the technological process. It would be wise to determine these stages and to combat the pollution of water used in the technological process on this basis. This would undoubtedly aid us in achieving our goal with lower expenditures.

All of the efforts of construction workers, efficiency experts and designers must be put into action. We cannot forget that the fight against pollution will be repaid with interest and will aid us in increasing our reserves of fish and other living organisms in the Caspian.



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SOVIET-IRANIAN POLLUTION CONTROL MEASURES IN CASPIAN SEA

Tbilisi ZARYA VOSTOKA in Russian 11 Jan 77 p 4

/Article by A. Khachikyan: "At the Center of Attention Are Problems of the Caspian"/

/Text/ In Moscow at the end of last year a meeting of the Working Group of Soviet and Iranian Specialists on Problems of Preventing the Pollution of the Caspian Sea took place.

In the economic and cultural life of our country and Iran the significance of the Caspian Sea is enormous. The Caspian is, above all, a very rich storehouse of fish and natural wealth. Moreover, its shore is used extensively for organizing the relaxation and treatment of the population.

In recent years at industrial enterprises and in many cities on the Soviet coast of the Caspian new purification facilities have been constructed and existing ones reconstructed, and systems of recycling and return water supply have been put into operation. The ports have been equipped with modern machinery for receiving and purifying ballast waters, and in the area of oil drilling the discharge of oil into the sea has been completely eliminated. Moreover, all Soviet ships of the Caspian Steamship Company have been equipped with special purification systems.

Three years ago a joint Soviet-Iranian working group was created for the purposes of coordinating the work with Iran. Specialists from both countries meet annually and share the results of research, visit water-protection projects and scientific laboratories, and discuss plans for the future.

At the December meeting of specialists from both countries there was a discussion of the work program of scientific and technical cooperation on the problems of preventing the pollution of the Caspian Sea up to 1980. Much attention was devoted to carrying out comprehensive studies on the use and protection of the water resources of the Iranian shore and the southern Iranian section of the Caspian, and to the ecology of the water of this region.

Last year joint research on the southern Caspian was carried out on the Soviet ship, the "Radon." Later on the ship will take on an Iranian airplane equipped with a spectroscopic movie camera, which will make it possible to increase the efficiency of hydrochemical and oceanographic work.

The chief of the Soviet delegation, Vladimir Papisov, noted that the cooperation of the two countries is promoting the cleanness of the sea and the multiplication of the wealth of unique fish.

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AZERBAYDZHAN STRENGTHENS ANTI-POLLUTION CONTROLS

Baku VYSHKA in Russian 4 Feb 77 p 3

[Article: "To Preserve Nature and To Efficiently Use Natural Resources"]

[Text] Specific steps have been taken in the Azerbaydzhan SSR in recent years to improve environmental protection and to efficiently use natural resources. At the same time, as was noted at the joint session of the commissions on protecting the environment of the USSR Council of Ministers and the Council of Nationalities of the USSR Supreme Soviet, the republic still has existing inadequacies in the matter of environmental protection and efficient use of natural resources. In particular is the slow realization of construction of projects for purification of industrial, municipal and domestic sewage. The capital investments allocated for these purposes are not being completely utilized. The existing sewage treatment plants at many enterprises are not equipped with gas and dust trapping facilities and those having them use them inefficiently. Still not eliminated are those instances in which there are violations of the standards set up in land, water and mining legislation.

The Azerbaydzhan SSR Council of Ministers adopted a decree which obligated the republic's ministries and departments, the Nakhichevanskaya ASSR Council of Ministers, the Nagorno-Karabakhskaya Autonomous Oblast executive committee, the executive committees of the rayon and municipal councils of workers' deputies, and managers of enterprises and organizations of union subordination to inspect every enterprise for the status of conditions in the construction of sewage treatment plants, circulating water supply systems, gas purification and dust trapping devices and to check how well progressive industrial technology was being introduced.

The managers of republic ministries and departments and organizations and enterprises of union subordination have been ordered to establish strict control over the complete realization of all measures concerning the protection of nature and the use of natural resources.

The Baku city executive committee, the republic's Ministry of Industrial Construction and the main Baku construction organization, Glavbakstroy, must intensify their control over intracity and external networks and structures

used in Baku's domestic sewage system. They must fully utilize allocated capital investments and put these facilities into operation on a timely basis.

The Ministry of Municipal Services has been entrusted with taking the necessary measures to accelerate the introduction into operation of sewage networks in cities and towns.

Control will be intensified over compliance by the kolkhozes, sovkhozes and other enterprises and organizations with the established ruled for toxic chemicals as well as for observance of the requirements for the purification of sewage water.

In three months the Azerbaydzhan SSR State Planning Committee, in conjunction with corresponding union, union-republic and republic ministries and departments, must present for examination by the republic's Council of Ministers the measures developed for complete, effective and efficient utilization of all of Azerbaydzhan's natural resources.

The development of new, more effective methods to purify sewage water and fumes discarded into the atmosphere will be carried out by the republic's academy of sciences, by scientific research and planning institutes and by ministries and departments.

Concrete proposals for further improvement in the condition of existing preserves and, where the need arises, for the creation of new ones are being devised.

Measures have also been outlined intended for further improvement in the construction and activation of sewage treatment plants, and for intensifying inspection and control over compliance with the laws on protecting nature and using its resources.

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CSO: 5000

OBSTACLES IN THE PATH OF THE ELECTRIC CAR

Baku VYSHKA in Russian 27 Jan 77 p 4

/Article by L. Shugurov, engineer: "Will Electric Cars Appear on the Streets?"/

/Text/ The electric car has now become the car of the day. The press of many countries is writing about it as a magic means which will save the atmosphere of cities from pollution. But what is preventing the electric car from supplanting the ordinary car? For its advantages are obvious: it is quiet, it does not give off harmful emissions, it can operate in any cold weather.

There are some reasons which are slowing the wide dissemination of such a promising means of transportation. Above all let us note that each electric car must carry its own power supply. In this it differs, for example, from the trolley bus, which obtains its power from a contact network. So far no more practical a means has been found for "storing" electric power than in batteries. Among the variety of their designs the least expensive, and thus the most suitable for the electric car is the plumbic acid battery. But these batteries are extremely heavy, their charge lasts a long time.

Scientists and engineers are studying ways to improve the charge, economical ways of consuming power, and are trying to accomplish recharging while braking. In the USSR, for example, the all-union scientific research institutes of electrical engineering, motor transport and electric transport, the institutes of Yerevan and Zaporozh'ye, the Ul'yanovsk Motor Vehicle Plant, the Riga Bus Plant and many others are dealing with these problems. For such cars they are now manufacturing thyristor steering assemblies, transformers of the direct current of batteries into alternating current, and so on. But these design innovations complicate the electric car and make it more expensive. In it, too, half of the weight is batteries, and its operating range is limited to 60-80 kilometers.

But imagine that the problem of batteries was nevertheless resolved. Let us assume that silver-zinc batteries took the place of plumbic acid ones.

True, they are expensive, but the health of people is dearer... In short, let us assume that for this "ideal" battery industry had already found the means of mass production and the reserves of raw materials for this were unlimited. Would the electric car then replace the millions of cars and motorcycles?

Unfortunately, no. Because in order to charge the batteries 6 trillion kilowatt-hours of electric power would be needed. And this figure is imposing. Suffice it to say that all the electric power stations in the world produce 1.5 times less power.

But let us assume that the power problem has been solved: enough electric power stations have been built. But today the lion's share of power is produced by thermal power stations which, by burning coal, oil and fuel oil, are emitting the products of combustion into the atmosphere and polluting it.

Hydroelectric power stations? Yes, that is the solution to the problem. But they require large capital outlays which are recovered years later. It is obvious that in the future the ratio between thermal power and hydraulic stations will have to change. But that is in the future. The share of nuclear power stations in the power balance is small. And at present it is difficult to triple the ratings, to the extent that their operation is suitable for meeting electric car needs.

Let us make an assumption here as well. We will assume that all the complications are behind us--the planet has been "inundated" with the new cars. But how will their crews feel? At present it is difficult to give a definite answer as to what the influence is of an electric field on the human body.

And the charging and discharging of the batteries? It is accompanied by the generation of toxic gases, the concentration of which can have a definite influence on both the human body and the environment. In other words, one problem leads to another.

But it would be wrong to think that these causes cannot be overcome. Now in almost every country, including ours, active scientific research is being conducted on the application of electric propulsion to the automobile. Some prototypes of these cars have shown encouraging results, several plants have even started to produce electric cars within limits, of course, not more than several thousand per year. Scientists are persistently looking for fuel elements, new types of batteries, hybrid designs in which the interal combustion engine drives a generator, and so on.

The range of problems outlined here, which stand in the way of the electric car, shows that it is a great and complex task. But, evidently, it will be solved in some way or other.

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MAN, THE AUTOMOBILE, THE ENVIRONMENT

Tashkent PRAVDA VOSTOKA in Russian 13 Jan 77 p 2

/Article by A. Mutalibov, rector of the Tashkent Highway Institute, honored figure of science and technology of the Uzbek SSR, professor, doctor of technical sciences: "Transport and the Environment"/

/Text/ In December 1976 there was held the first session of the scientific council of the Academy of Sciences of Uzbekistan, "Regional Problems of Efficient Utilization and Protection of the Biosphere." This is a noteworthy event in the scientific life of the republic. Reports on many aspects of this most important social and national economic problem were heard and discussed. The implementation of the decisions of the session will make it possible to considerably improve all work connected with the protection of the air, water, soil and all the wealth of nature.

The problem of protecting the environment, including its component and most important part--the atmosphere, today is of a global nature. In the Accountability Report of the CC CPSU to the 25th party congress L. I. Brezhnev emphasized that in the future many global problems "will have an increasingly more noticeable influence on the life of each nation and on the entire system of international relations. Our country, like the other socialist countries, cannot remain aloof of the solution of these problems, which concern the interests of all mankind."

Under the conditions of rapidly advancing scientific-technical progress and the increasing scopes of production, the problem "man--the automobile--the environment" has assumed a global nature.

From the data of domestic and foreign scientists we know that for such toxic components as carbon monoxide, various hydrocarbons (including

carcinogens), nitrogen oxides and others, motor transport plays a dominant role in the pollution of the atmosphere. The highest typical peaks of concentration of carbon monoxide and nitrogen oxides occur precisely at the peak traffic hours. Several distinctive features are characteristic of motor transport at a source of pollution of the atmosphere.

First of all, the number of automobiles in major cities is growing very rapidly, which is leading to an increase in the total amount of exhaust entering the atmosphere. During the Tenth Five-Year Plan the output of automobiles will increase to 2.1-2.2 million per year. According to the data of corresponding member of the USSR Academy of Sciences D. P. Velikanov, in the future there will be 100-120 automobiles per thousand inhabitants of our country. In foreign countries, especially in the United States and Japan, this figure is already significantly higher--435 vehicles per thousand people at the beginning of 1971.

Second, the automobile as a moving source of pollution emits toxic exhaust components on the level of man's breathing not only within the industrial zone, but also in residential sections and rest places.

Third, the mobile nature of the thermal power machine seriously complicates the solution of the problem of decreasing the toxicity of the exhaust gases of automobiles, while at industrial enterprises and thermal electric power stations this problem can be solve much more simply.

Fourth, the briefness and high degree of intensification of the processes of combustion, which take place in the automobile engine, characterize the conditions of the formation of the great diversity of products of complete and incomplete combustion.

And finally, fifth, the difference in the skill of drivers and the extensive changes in the conditions of operation of thermal power transport machines complicate the extensive introduction of a complex of measures on decreasing the harmful effect of exhaust gases on the environment.

The uncontrolled development of individual motor transport in the capitalist countries led a number of very large cities to an ecological crisis. In our country, as in the other socialist states, under the conditions of a planned economy the problem of pollution of the atmosphere has not become so acute. We have at the basis of our transportation system the subway, trolley buses, buses and trolleys, that is, social types of transportation. This creates the conditions for purposeful work on protecting the atmosphere. But this does not mean that the problems of protecting the atmosphere from the toxic exhausts of motor transport do not disturb us.

The fleet of personal automobiles is growing in our country as well. Thus, whereas in 1971 there were 2,000 automobiles sold to the workers of Uzbekistan, in 1975 there were 24,000 sold. The number of motorcycles and mopeds is increasing no less rapidly.

An in-depth scientific analysis showed that the present level of development of science and technology makes it possible to implement three realistic scientific-technical methods, with the aid of which the demands to decrease the toxicity and smokiness of the exhaust gases of automobiles can right now be met.

Years of research experience and the results of the first stage of implementing our recommendations have shown that right now it is possible to halt the further increase in the harmful effect of the exhaust gases of motor transport on the atmosphere.

Our institute has elaborated methods and means for the optimum regulation of the fuel and electrical equipment of gasoline automobiles, on the basis of which at the republic Ministry of Motor Transport there have been put into effect "Instructions on Checking and Adjusting Automobiles for Minimum Toxicity." The ecological impact of this adjustment is quite convincing. A correctly adjusted car engine emits into the atmosphere 10-12 times less toxic components than a nonadjusted one.

The staff workers of the Tashkent Highway Institute together with the workers of the republic Ministry of Motor Transport and the transport administration of Glavtashkentstroy /Main Administration of Housing and Civil Engineering Construction in Tashkent/ have created and put into operation two mobile laboratories of linear control, PLLKT-2 and PLLKT-3. The same kind of work is being done to reduce the smokiness of diesel vehicles, especially the Ikarus buses. A new design of the DM-2M optical electronic smoke detector, which was created by the staff workers of our institute, has been drawn up.

All this will have an unquestionable impact only if all motor vehicles without exception are properly adjusted, and not just the vehicles of the republic Ministry of Motor Transport, which make up only 17 percent of the motor vehicle fleet of Uzbekistan.

The second largest area of research is connected with the intensification of the processes of combustion and the collecting of toxic components by various physical and chemical methods. The utilization of the methods and means of electrostatic technology is the most promising in this direction of research. Two designs of neutralizers and carbon precipitators, which are based on the principles of electrostatic technology, have been created and have undergone bench tests at our institute. Their distinction from existing designs is that instead of expensive catalytic converters the process of further oxidizing the products of incomplete combustion in the neutralizer is intensified by a flow of ions, which are generated by a compact built-in high voltage device.

The third direction of research is connected with the use of new fuel, including local fuel. Years of research and the ten-year experiment of the operation of bottle-gas driven vehicles at the Bukhara Group Base of Liquid Propane-Butane Gas, which were converted to operation on this fuel by

a group of our staff workers, have shown that in this way a substantial reduction in the toxicity of exhaust gases is achieved--8-10 times less than the exhaust of a gasoline engine. At the same time, the time between repairs increases 2-3 times, the consumption of crankcase oil decreases 3-4 times. All this has a substantial ecological and economic impact.

Unfortunately, the extensive promotion of our recommendations on the gasification of motor transport is being delayed owing to the lack of automobile gas-filling stations and a shortage of gas fueling equipment. The construction of such a station in Tashkent is planned for the Tenth Five-Year Plan. The output of gas fueling equipment for motor transport at a plant in Ryazan' is being increased.

We hope that in the current five-year plan at least some of the automobiles in Tashkent will be converted to operation on liquid gas. It should be emphasized that the gasification of motor transport under the conditions of Uzbekistan is a very promising matter.

Of late the problems of the more efficient refining of motor fuel and the problem of creating and using low-toxicity fuel have increasingly attracted the attention of researchers. In connection with this I will dwell on the work of our institute on using water as a component of motor fuel.

Our institute is conducting research on the addition of water to fuel along two lines: the separate feeding of water and fuel to the cylinders of the engine; the feeding to the cylinders of the engine of a water-fuel emulsion prepared in advance. The second line is being developed in cooperation with a group of staff workers of the Academy of Sciences of Uzbekistan, headed by candidate of technical sciences T. Makhmudov.

At present at the Tashkent Highway Institute the development, production and testing of methods and both stationary and transport equipment for obtaining the water-fuel emulsion and the direct injection of water have been completed. The use of water as a gasoline additive makes it possible to discontinue almost completely the use of tetraethyl lead as an antiknock additive, which will stop the emission into the atmosphere of lead compounds with exhaust gases. Moreover, the use of water as a component of motor fuel makes it possible to decrease by almost two times the emission of carbon monoxide and nitric oxide. In 1975 a series of operational tests was carried out on the use of water-fuel emulsions in Volga automobiles, which completely confirmed the results of laboratory studies and bench tests.

The listed lines of research in no way encompass the entire spectrum of work aimed at decreasing the toxicity and smokiness of exhaust gases, which is being conducted at our institute or in other organizations with which we are connected by agreements on cooperation or by other creative ties.

In order to solve the tasks of protecting the atmosphere from pollution by automobile exhaust gases it is necessary to implement a complex of

interrelated measures. Environmental protection is a comprehensive problem which includes a complex of organizational, technical, scientific research, economic, informational and many other measures. They can be implemented only by the joint efforts of many collectives and all the workers.

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## BRIEFS

CASPIAN ANTIPOLLUTION FACILITY--Neftyanyye Kamni (Azerbaydzhan SSR), 3 Dec--The latest oil-collection station has been constructed on an offshore oil field far from the banks. This would seem to be a common occurrence in the life of a large industrial concern. But, in the first place, the station has replaced several existing stations and, in the second place, this station has been specially designed for offshore drilling. Now the oil will be removed from the sand and water ejected from the well, and the purified water will then be pumped to the bottom of the sea and used to maintain the artificial reservoir pressure. When the second of the oil-collection stations of this type begins operating, the entire technological cycle of pumping the oil into tankers will be pressurized. [Text] [Moscow PRAVDA in Russian 4 Dec 76 p 6] 8588

BACTERIAL WATER PURIFICATION--Krivoy Rog--Each day the Krivoy Rog Coke By-Products Plant absorbed an average-sized river and discharged 0.3 cubic meters of water containing phenol into the environment with each ton of coke. "For several years now," said V. Krishtop, plant director, "our water has been recycled and we have only used a small quantity of additional water for technical use. We solved the problem of purifying the water polluted by phenol with bacteria." This biological method of purification was suggested by the Khar'kov Coal Chemical Institute and the State Institute for the Planning of Establishments of the By-Product Coke Industry. The bacteria gladly "eat" the phenols and rhodanides and take away their toxic properties, and the water becomes suitable for re-use in the technological process. [Text] [Moscow IZVESTIYA in Russian 11 Jan 77 p 2] 8588

NIYAZBEKOV DISCUSSES CONSERVATION--The purification installations of Kazakhstan now return more than 3 million cubic meters of industrial sewage to production units each day. At the Dzhezkazgan Mining and Metallurgical Combine, all of the purified sewage enters the recyclable water supply system and fresh water is only used to replenish the supply. More than 700 industrial enterprises in Kazakhstan now have water purification facilities. Measures are being taken to prevent the pollution of the Caspian Sea, the Ural and Irtysh rivers and bodies of water in the Karaganda-Temirtau industrial region. The purification of the water in the Ural, Ishim, Tobol and other rivers has established the necessary conditions for the conservation

and reproduction of their valuable stocks of fish. These and many other facts are related in the brochure by S. B. Niyazbekov, chairman of the Presidium of the Kazakh SSR Supreme Soviet and chairman of the Presidium of the Central Council of the Kazakh Environmental Protection Society--"The Universal Cause," published by the Kaynar Publishing Firm. The author describes the work being done by party, soviet and public organizations in the struggle to purify the environment and ensure the intelligent use of natural resources and speaks of urgent problems connected with the future improvement of conservation work and the augmentation of natural wealth. [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 1 Dec 76 p 3] 8588

UKRAINIAN ANTI-POLLUTION INNOVATIONS--Kiev--"Recipes" for inexpensive pastes that cannot be penetrated by oil and water have been developed by the scientists of the Institute of Colloidal Chemistry and the Chemistry of Water of the Ukrainian Academy of Sciences. These innovations have been successfully adopted for environmental protection against industrial sewage. "For the first time a new method for isolating industrial by-products has been attempted at the Kremenchug petroleum refinery," says the man managing this work, professor N. N. Kruglitskiy. "A natural basin was used to build the reservoir-vaporizer. Around it a trench two meters wide and 10 meters deep was dug and then filled with dirt containing a special paste. What we had was a circular wall--an insurmountable obstacle to petroleum by-products. Now similar trenches have been built at the Groznyy petroleum refinery and at the Nakhichevan' soda plant." This method has turned out to be quite effective even for keeping ground water from dams, tunnels, underground street passageways and houses while they are under construction. Similar methods but for combatting water losses are being adopted during construction of irrigation canals. [Text] [Kiev RABOCHAYA GAZETA in Russian 9 Jan 77 p 2] 8504

CSO: 5000

# WATERLESS COOLING PROPOSED FOR NUCLEAR POWER PLANTS

Paris LE MONDE in French 29 Jan 77 pp 1, 30

[Article by Xavier Weeger]

[Text] The French Electric Company (EDF) justifies its choice of sites for the construction of nuclear power plants by the argument that large quantities of water must be disposed of. Therefore, electronuclear reactors are installed on the seacoast or along rivers.

Is there an alternative to this policy? A study carried out in 1975 by the Ministry of the Standard of Living seems to answer in the affirmative. According to this study, a new cooling process would make it possible to get away from this "water requirement" almost completely, at a competitive cost price, and to choose sites more judiciously. This study, which has not yet been made public, shows once again that the last word has not been spoken on the subject of nuclear power. It should provide arguments for the environmental protection groups, which are particularly anxious, in public service hearings, to confront the EDF with plausible alternative solutions.

"Nuclear power plants need water." Like all thermal power plants, they transform only about a third of the energy they produce into electricity. Up to now, the EDF has adopted two types of technique for electronuclear installations, to get rid of the excess heat while guaranteeing that the installation is properly cooled.

One technique is open-circuit refrigeration: water taken from the sea or from a river passes through the cooling system, where it is heated up before being thrown out. A great deal of water is needed in this case, since about 150 cubic meters of water per second must be available for four 900-MWe reactors.

The second solution uses less water. It uses aerial refrigeration, which can take the form of gigantic banks of fans (forced-circulation aerial refrigeration) or of immense towers, frequently more than 100 meters high (natural-circulation aerial refrigeration); the water is not only heated up, it is vaporized. For four 900-MWe units, the amount of water used is about 2.2 cubic meters per second, to which must be added the 5 cubic meters of water returned to the sea or the river, in order to prevent fouling of the cooling circuits.

Finally, in view of the standards for radioactive wastes, 3.5 cubic meters of water per second are necessary for each 900- to 1000-MWe unit, in order to obtain the proper dilution of the radioactive effluents. When the equipment on the banks of the Loire, at Dampierre and Saint-Laurent-des-Eaux, is completed, the amount of water used (for evaporation plus dilution of salts and effluents) will be a little more than 30 cubic meters per second.

The EDF's plan for installing nuclear power plants strictly obeys the rule that "water is necessary for a power plant." This leads to the installation of reactors on the seacoast, or along rivers large enough so that there is no excessive heating of the water.

[One or more lines of the French text are missing at this point.]

In order to have a sufficient flow of water all year long, [it is] necessary to regulate the river water by means of dams located up-stream (like the Naussac dam, for example). In addition to the harmful ecological influence that the construction of such reservoirs may have, there are the still poorly-known consequences of heating the water down-stream from the series of power plants along the river banks. The temperature of the Rhone could rise as high as 30 $^{o}$C.

According to the study carried out in 1975 by the Ministry of the Standard of Living, it is possible to get away from this dependence on water by the use of "dry" aerial refrigeration, using air alone to cool the steam that turns the power plant's electric turbine. The water circuit is completely closed -- none is taken from nor returned to the natural environment. Such a cooling procedure is already fairly widely used in various chemical industries, for example, which are also anxious to limit their consumption of water these days. Thus it is not a matter of a technological revolution, but rather of the adaptation of a proven technique to special conditions and to high power.

According to the study, the use of "dry" aerial refrigeration would entail an additional cost of around 5 percent with respect to present procedures. The calculations were made with the help of Creusot-Loire, which considers itself capable of building such an installation. The specialists of the Ministry of the Standard of Living believe that this additional cost is not an insurmountable obstacle, since "independence" from water would make possible a more judicious choice of sites. The study also shows that it would be possible to install power plants of this new type in Champagne, a chalky region that is "strategic" because it is located near Lorraine, the North, and the Paris region, which are large consumers of electricity. Moreover, the power plants could be constructed in the immediate vicinity of "transport corridors" for electricity. The power plants of the immediate future, especially those on the seacoast and thus more often than not "at the end of the line," require the laying of very long lines and have the disadvantage of causing large power losses in transit. These problems would vanish in Champagne and, according to the study, the resulting savings would compensate for the additional cost of the "dry" aerial refrigeration.

In addition, the first part of the study made by the Ministry of the Standard of Living, which is entitled "Toward a Strategy for the Installation of Nucleoelectric Power Plants," proposes the installation of nuclear power plants

at the edges of great series of dams, like that on the upper Dordogne. The purpose, once again, is ecological in nature. The first proposal was aimed at avoiding a waste of water. In the second proposal the ministry's technicians are trying, roughly, to "balance one kind of pollution with another."

In fact, hydroelectric dams have the serious and poorly-known disadvantage -- in addition to completely changing the rate of flow of a river -- of discharging very cold, oxygen-poor water. The deep layers of the Bort-les-Orgues reservoir, in Correze, are at a temperature between 4 and 6°C in both summer and winter. The report emphasizes that during discharges, the water of the Dordogne can abruptly change in temperature by more than 10 °C. This is what the specialists call a "thermal shock."

Its consequences are serious, since they have led to a change in the aquatic fauna and since there is now a severe proliferation of algae in certain parts of the river's course. For example, melon growing has almost disappeared from the alluvial plains.

Therefore, the study proposes installing nuclear power plants at the edge of the dams. By making judicious use of the various available sources of cold water, the power plants could manage to regulate the thermal balance of the water, and to restore somewhat the original equilibrium of the water course.

Are the alternatives proposed by the study really credible? The EDF specialists have not neglected to study them -- far from it. For a long time they have put a test bench, at Champagne-sur Oise, at the disposal of builders who wish to test materials for the construction of aerial refrigeration units. The EDF even recognizes that the study made by the Ministry of the Standard of Living has the advanatge of proposing somewhat provocative, or at least "stimulating," solutions. But the specialists who are studying the question now judge this report to be both somewhat obsolete and ahead of its time, since they say that they are planning to work out the technique of "dry" aerial refrigeration about 10 years from now, for the "second generation" of nuclear power plants.

They have two types of objection to this procedure: the use of air as a cooling fluid would entail a considerable change in the steam turbines which they are now trying to mass-produce, in order to cut costs; and, more importantly, there remains the problem of the radioactive effluents. It is not yet possible, the specialists say, to do without large quantities of water in ejecting these effluents. As for installing power plants on the edges of water reservoirs in order to restore ecological equilibrium, the EDF specialists tend to see this as "swatting a fly with a sledge-hammer."

The environmental protection groups that are familiar with this report should not be long in demonstrating on this ground. But their action, however justified and effective it may be, cannot compensate for the absence of a national debate on the installation of nuclear power plants. To be sure, the local population is invited to a public service hearing to give its opinion on the installation of a power plant. But is it not true, as one specialist has said, that "the installation of a power plant at Flamanville affects more than the inhabitants of Flamanville"?



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INDUSTRIAL PROJECTS THREATEN ENVIRONMENT IN SCANIA

Stockholm DAGENS NYHETER in Swedish 12 Jan 77 p 13

/Article by Claes Sturm of the Malmo Bureau of DAGENS NYHETER/

/Text/ A reply from the Boliden Company to landowners in Osterlen--to the effect that the company, with the support of mining legislation and the permission of the Falun Inspector of Mines, will begin test drillings for various minerals--has exploded like a bomb.

In a little more than a month the government's reply is expected to Boliden's earlier request for permission to explore an area 2 Swedish miles long and several kilometers wide, with a view to uranium mining.

After a meeting with the government, those who opposed "Project Kambrium" had begun to hope that the request would be turned down and that nature would be saved.

"Boliden is evading this environmental test," they say, "and it will only be a matter of time before this unique landscape is devastated."

Boliden has applied for permission to explore the project for 8 years, which would include, among other things, some form of exploratory mining. There is the possibility that future large-scale production could last for 40 years and provide from 100 to 200 jobs.

The latter inducement offered in this depopulated area was sufficient to obtain an unreserved vote of approval from the Tomelilla municipality. The Kristianstad County administration voted yes, subject to a long list of conditions that included environmental issues.

But conservationists, increasingly followed by a large percentage of the population, raised a kick. With Ranstad, as an example, they called attention to the tremendous destruction of nature that is unavoidable with the location of such an industry. The gigantic mines would cause a water

shortage for miles around, with all the agricultural problems contingent upon that. An extensive system of highways would have to be built. Sulfur would be produced, and this would be destructive to apple orchards--there would be more people leaving the area than jobs opening up.

"With the aid of the archaic mining law that does not require environmental tests," say the environmentalists, "Boliden plays its trump card now that the company realizes that opposition to the proposed uranium mining is a bit too strong."

"In our meeting with the government we were told that the attitude of the local population will carry considerable weight in the government's decision of the question. More than 3,000 signatures on a petition against the project is an indication of what that attitude is," but what good is that when a government agency can still go ahead and give permission?

Even the county administration at Kristianstad is feeling uneasy. It is unfortunate that there are two differing systems of laws that regulate the issues in this area: on the one hand, there is the minerals law, which provides for a political institution (the administration) to grant permission, while on the other hand the mining laws provide for a government agency (the Inspector of Mines) to make the decision.

"It's confusing," was the comment of County Alderman Allan Johansson at Kristianstad during a radio interview.

At Falun, Inspector of Mines Erik Knubb, who is responsible for granting permissions in line with the mining law in southern Sweden, would like, however, to reassure all of the agitated nature lovers: "There has been no change in the matter. That is what I was trying to say at a public meeting in Onslunda before Christmas. But it seems no one wants to understand me."

He points out that the mining law is not all that archaic--it was passed in 1974.

According to this law the Inspector of Mines may give permission for prospecting and eventual mining where the soil is found to contain, e.g., iron, copper and other minerals suitable for industrial production.

What Boliden now wants to investigate is the availability in the Osterlen area of vanadium (an alloy metal), lead and apatite (for use in fertilizer).

The fate of the entire Project Kambrium at Osterlen will be decided on the basis of obtaining a long list of items, none of which would be profitable for exploitation by itself, but a combination of which could be profitable. If, according to the mining law, it is permitted to extract lead, apatite, and vanadium from shale, what would hinder taking uranium and kerogen out as byproducts?

"According to the law of concessions, they would not be permitted to do this," says Inspector Knubb with conviction. Only the government could decide that. This is why I feel that the permission I have given would scarcely lead to an actual mining operation.

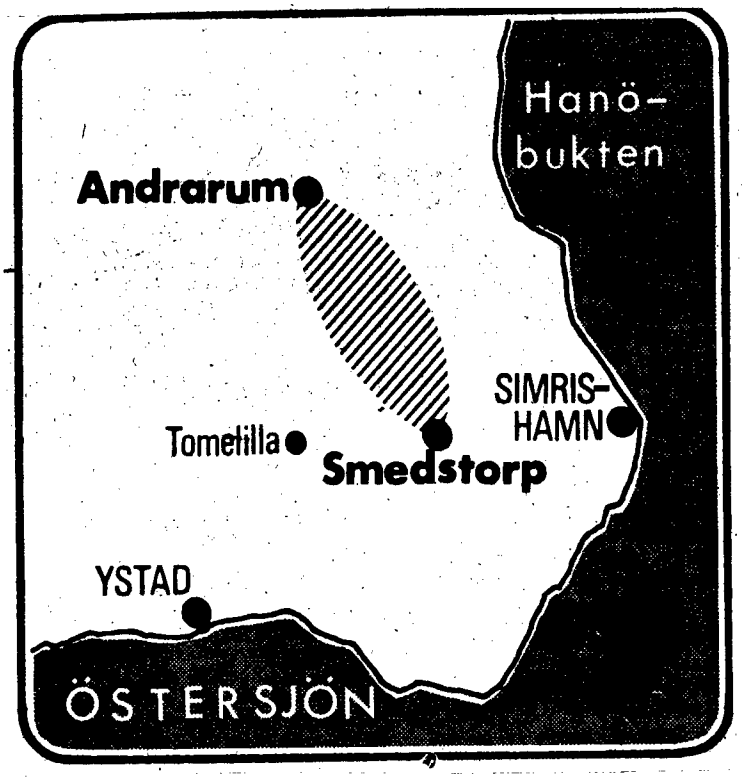
Boliden's original application for a concession, now a year old, which created all this turmoil in the first place, calls for extracting 2 million tons of alum slate annually. The work would be done in 4-10 open quarries, along 300 galleries 300 meters long and extending to a depth of 100 meters. The quarry is to be filled in again gradually. The area involved extends from Andrarum in the north to Smedstorp in the south.

"If we do any mining, we will leave the place in good order afterward," said the Boliden representatives.

"Thanks a lot," replied the people of Osterlen. "Who can ever bring back the heather-covered "falads" at Listarum, the beech trees at St Olof, or the velvety pasture lands along the Verkean?

And then they call attention to the all-too-visible evidence from previous mining operations in the district. No restoration was ever made then.

This is why they don't believe the promises now. This is why they also do not trust the Inspector of Mines at Falun but prefer to suspect that some dirty trick is afoot.

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ANKARA ANTI-AIR-POLLUTION MEASURES INSUFFICIENT

Istanbul CUMHURIYET in Turkish 4 Jan 77 pp 1, 9

[Article by Engin Karadeniz: "Seyitomer Smokeless Fuel Plants Inadequate to Prevent Ankara Air Pollution"]

[Text] Ankara (CUMHURIYET Bureau) - The Prime Minister's Supreme Control Council has sent a report to the office of the Prime Minister saying that the smokeless fuel facilities built in Seyitomer to prevent air pollution in Ankara cannot fulfill their planned and necessary purpose.

The Control Council said in the report that a sum of 104 million liras had already been spent on the Seyitomer smokeless fuel facility but "the plants were experiencing cost overruns because the necessary studies on fuel quality had not been made." The installation is "clearly a mistake," the report said.

The report shows, moreover, that the Turkish Coal Works had taken out high-interest bank loans to finance this installation and says that "the wages of the contract workers at the installation had not been paid, much less the interests of the installation itself being met."

The Ministry of Energy and Natural Resources met opposition to its request to inspect the installation, according to the report, which also reveals that to date "only the drying section" had been put into operation, with the carbonization and coking units not yet functioning.

Working with the MTA

An official from the Mining Research Institute [MTA] made the following statement about the Seyitomer facility:

"Planning for this smokeless fuel facility was inadequate. The high sulfur content of the smokeless fuel obtained, as determined from the guarantee accounts, is an argument against the ability of this facility to obtain quality fuel. This is shown also in the report by the Prime Minister's Supreme Control Council. In view of the high selenium content of Ankara's

air as well as its effect in 60 per cent of fuel oil, the Seyitomer smokeless fuel facility was clearly a mistake. Instead of the project which anticipated 130,000 tons of smokeless fuel, perhaps it would be better to start again with the MTA."

Foreign Mission Reports

In addition, Neset Kocabiyikoglu, secretary of the Chamber of Mechanical Engineers, made a statement yesterday about Ankara's air pollution problem in which he revealed that certain embassies have sent reports on the subject back to their governments. "All of them show that air pollution in Ankara is far worse than the safety limits," he said.

According to the chamber secretary's statement, many foreign missions in Ankara, including the U.S., Canadian, and Australian, have sent reports to their governments requesting "hazardous-duty pay" for their personnel working in Ankara because of the air pollution. The U.S. Embassy has suggested that Americans move out of the city. In some reports, Ankara is described as "a city unsafe for children to live in."

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MUNICIPALITIES' CLEAN-UP EFFORTS YIELD RESULTS

**Istanbul AKSAM in Turkish 28 Jan 77 p 5**

[Text] The Republic Attorney General brought suit against 64 industrial plants found to be dumping toxic residues into the sea.

Many of the plants that were brought to court quickly began detoxifying the dumped residues and, at some, purification facilities were installed. The action by the Marmara and Straits Municipalities Union has had an immediate positive impact on marine products.

As a result of their efforts, the number of bluefish and Spanish mackerel caught in the past year in the affected area is more than the total taken over the past 10 years. Such time-honored favorites among seafood varities as lobster, crabs, and shrimp are once again being taken from the waters of the Gemlik, especially the Bosporus, and gradually even from Izmit Bay.

Within the area affected by the Marmara and Straits Municipalities Union efforts, no ship excavation sites have been allowed to open, and existing ones have not been allowed to operate. Noting that sunken ships provide fishing beds, the practice of raising ships from the bottom has been halted, and all contracts with the National Properties Directorates have been discontinued.

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